CLAIM AMENDMENTS:

1. (Currently amended) A method for detecting motion pixels in an image, comprising the steps of:

step 1: obtaining a difference image according to a difference between a current image and a background image;

step 2: finding a first binarization threshold from [[the]] a distribution of all absolute pixel values in said difference image;

step 3: using all or part of the pixel values, in said difference image, whose absolute values are smaller than or equal to said first binarization threshold to compensate the effect of an illumination change and to obtain an updated difference image;

step 4: finding a second binarization threshold from the distribution of all absolute pixel values in said updated difference image, changing the pixel values whose absolute values are larger than said second binarization threshold to high, and changing the pixel values whose absolute values are equal to or smaller than said second binarization threshold to low, thereby obtaining a binarized updated difference image; and

step 5: determining pixels in said binarized updated difference image whose values are high as motion pixels;

wherein said step 2 includes the sub-steps of:

(1) counting occurrences of all absolute pixel values to plot a cumulative histogram of pixel values, wherein a transverse axis of said cumulative histogram indicates all possible absolute pixel values arranged in ascending order, and a

longitudinal axis indicates a cumulative occurrence count equal to or smaller than the absolute pixel values;

(2) defining two linear segments constructed by (i) an occurrence count of the minimum absolute pixel value, (ii) said cumulative occurrence count of the absolute pixel values equal to or smaller than a selected absolute pixel value between the minimum and maximum absolute pixel values and (iii) said cumulative occurrence count of the absolute pixel values equal to or smaller than the maximum absolute pixel value, wherein said selected absolute pixel value includes all possible absolute pixel values between the minimum and maximum absolute pixel values;

(3) defining the coordinate of every point in the two linear segments as (i, L_i), and defining the coordinate of every point in an envelope line of the cumulative histogram as (i, E_i); and

(4) finding, among said selected pixel value, a pixel value that minimizes at least one of the sum $\sum_i |L_i - E_i|$, the sum $\sum_i (L_i - E_i)^2$, and the sum of the maximum correlation coefficient of $\{L_i\}$ and $\{E_i\}$ sequences, so as optimally to approximate the cumulative histogram, and designating said minimizing pixel value as said first binarization threshold.

2. (Currently amended) The method for detecting motion pixels in an image according to claim 1, wherein said ~~step of obtaining difference image between current image and background image in~~ step 1 is performed by subtracting said background image from said current image.

3. (Currently amended) The method for detecting motion pixels in an image according to claim 1, wherein said ~~step of obtaining difference image between current image and background image in~~ step 1 is performed by ~~eliminating~~ dividing said background image from said current image.

4. (Currently amended) The method for detecting motion pixels in an image according to claim 1, wherein said ~~step of obtaining difference image between current image and background image in~~ step 1 is performed by subtracting said background image after performing a logarithmic operation from said current image after performing a logarithmic operation.

5. (Canceled).

6. (Currently amended) A method for detecting motion pixels in an image, comprising the steps of:

step 1: obtaining a difference image according to a difference between a current image and a background image;

step 2: finding a first binarization threshold from a distribution of all absolute pixel values in said difference image;

step 3: using all or part of the pixel values, in said difference image, whose absolute values are smaller than or equal to said first binarization threshold to compensate the effect of an illumination change and to obtain an updated difference image;

step 4: finding a second binarization threshold from the distribution of all absolute pixel values in said updated difference image, changing the pixel values whose absolute values are larger than said second binarization threshold to high, and changing the pixel values whose absolute values are equal to or smaller than said second binarization threshold to low, thereby obtaining a binarized updated difference image; and

step 5: determining pixels in said binarized updated difference image whose values are high as motion pixels;

wherein said step 2 includes sub-steps of: ~~The method for detecting motion pixels in image according to claim 1, wherein said step of finding a binarization threshold from the distribution of all absolute pixel values in said difference image in step 2 comprises steps of:~~

(1) counting [[the]] occurrences of all absolute pixel values to plot a cumulative histogram of pixel values, wherein [[the]] a transverse axis of said cumulative histogram indicates all possible absolute pixel values arranged in ascending order, and [[the]] a longitudinal axis indicates [[the]] a cumulative occurrence percentage equal to or smaller than the absolute pixel values;

(2) defining two linear segments constructed by (i) an occurrence percentage of the minimum absolute pixel value, (ii) said cumulative occurrence percentage of the absolute pixel values equal to or smaller than a selected absolute pixel value between the minimum and maximum absolute pixel values and (iii) said cumulative occurrence percentage of the absolute pixel values equal to or smaller than the maximum absolute pixel value, wherein said selected absolute pixel value includes all possible absolute

pixel values between the minimum and maximum absolute pixel values;

(3) defining the coordinate of every point in the two linear segments as (i, L_i), and defining the coordinate of every point in an envelope line of the cumulative histogram as (i, E_i); and

(4) finding, among said selected pixel value, a pixel value that minimizes at least one of the sum $\sum_i |L_i - E_i|$, the sum $\sum_i (L_i - E_i)^2$, and the sum of the maximum correlation coefficient of $\{L_i\}$ and $\{E_i\}$ sequences, so as optimally to approximate the cumulative histogram, and designating said minimizing pixel value as said first binarization threshold ~~finding a value between the minimum absolute pixel value and the maximum absolute pixel value, such that the two linear segments constructed by the occurrence percentage of the minimum absolute pixel value, the cumulative occurrence percentage of the absolute pixel values equal to or smaller than the selected value and the cumulative occurrence percentage of the absolute pixel values equal to or smaller than the maximum absolute pixel value optimally approximate said cumulative histogram; defining the coordinate of every point in the linear segments constructed by the minimum absolute pixel value, the selected value and the maximum absolute pixel value as (i, L_i), and defining the coordinate of every point in the envelope line of the cumulative histogram as (i, E_i), such that the pixel value obtaining the minimum of $\sum_i |L_i - E_i|$, the pixel value obtaining the minimum of $\sum_i (L_i - E_i)^2$ or the pixel value obtaining the maximum correlation coefficient of $\{L_i\}$ and $\{E_i\}$ sequences is regarded as said binarization threshold~~.

7. (Currently amended) The method for detecting motion pixels in an image according to claim 1, wherein said ~~step of using all or part of the pixel values, in difference image, whose absolute values are smaller than or equal to said binarization threshold to compensate the effect of illumination change in~~ step 3 is performed by using an average value of all or part of the pixel values, in said difference image, whose absolute values are smaller than or equal to said first binarization threshold as a correction value, and then subtracting said correction value from said difference image, thereby obtaining said updated difference image.

8. (Currently amended) The method for detecting motion pixels in an image according to claim 1, wherein said ~~step of using all or part of the pixel values, in difference image, whose absolute values are smaller than or equal to said binarization threshold to compensate the effect of illumination change in~~ step 3 is performed by using an average value of all or part of the pixel values, in said difference image, whose absolute values are smaller than or equal to said first binarization threshold as a correction value, and then ~~eliminating~~ dividing said correction value from said difference image, thereby obtaining said updated difference image.

9. (Currently amended) The method for detecting motion pixels in an image according to claim 1, wherein said step of finding a binarization threshold from the distribution of all absolute pixel values in said difference image in step 4 comprises the sub-steps of:

(1) counting [[the]] occurrences of all absolute pixel values to plot a cumulative

histogram of pixel values, wherein [[the]] a transverse axis of said cumulative histogram indicates all possible absolute pixel values arranged in ascending order, and [[the]] a longitudinal axis indicates [[the]] a cumulative occurrence count equal to or smaller than the absolute pixel values;

(2) defining two linear segments constructed by (i) an occurrence count of the minimum absolute pixel value, (ii) said cumulative occurrence count of the absolute pixel values equal to or smaller than a selected absolute pixel value between the minimum and maximum absolute pixel values and (iii) said cumulative occurrence count of the absolute pixel values equal to or smaller than the maximum absolute pixel value, wherein said selected absolute pixel value includes all possible absolute pixel values between the minimum and maximum absolute pixel values;

(3) defining the coordinate of every point in the two linear segments as (i, L_i), and defining the coordinate of every point in an envelope line of the cumulative histogram as (i, E_i); and

(4) finding, among said selected pixel value, a pixel value that minimizes at least one of the sum $\sum_i |L_i - E_i|$, the sum $\sum_i (L_i - E_i)^2$, and the sum of the maximum correlation coefficient of $\{L_i\}$ and $\{E_i\}$ sequences, so as optimally to approximate the cumulative histogram, and designating said minimizing pixel value as said first binarization threshold ~~finding a value between the minimum absolute pixel value and the maximum absolute pixel value, such that the two linear segments constructed by the occurrence count of the minimum absolute pixel value, the cumulative occurrence count of the absolute pixel values equal to or smaller than the selected value and the cumulative occurrence count of the absolute pixel values equal to or smaller than the~~

~~maximum absolute pixel value optimally approximate said cumulative histogram; defining the coordinate of every point in the linear segments constructed by the minimum absolute pixel value, the selected value and the maximum absolute pixel value as (i, L_i), and defining the coordinate of every point in the envelope line of the cumulative histogram as (i, E_i), such that the pixel value obtaining the minimum of $\sum_i |L_i - E_i|$, the pixel value obtaining the minimum of $\sum_i (L_i - E_i)^2$ or the pixel value obtaining the maximum correlation coefficient of $\{L_i\}$ and $\{E_i\}$ sequences is regarded as said binarization threshold~~.

10. (Currently amended) The method for detecting motion pixels in an image according to claim 1, wherein said step of finding a binarization threshold from the distribution of all absolute pixel values in said difference image in step 4 comprises the sub-steps of:

(1) counting [[the]] occurrences of all absolute pixel values to plot a cumulative histogram of pixel values, wherein [[the]] a transverse axis of said cumulative histogram indicates all possible absolute pixel values arranged in ascending order, and [[the]] a longitudinal axis indicates [[the]] a cumulative occurrence percentage equal to or smaller than the absolute pixel values;

(2) defining two linear segments constructed by (i) an occurrence percentage of the minimum absolute pixel value, (ii) said cumulative occurrence percentage of the absolute pixel values equal to or smaller than a selected absolute pixel value between the minimum and maximum absolute pixel values and (iii) said cumulative occurrence

percentage of the absolute pixel values equal to or smaller than the maximum absolute pixel value, wherein said selected absolute pixel value includes all possible absolute pixel values between the minimum and maximum absolute pixel values;

(3) defining the coordinate of every point in the two linear segments as (i, L_i), and defining the coordinate of every point in an envelope line of the cumulative histogram as (i, E_i); and

(4) finding, among said selected pixel value, a pixel value that minimizes at least one of the sum $\sum_i |L_i - E_i|$, the sum $\sum_i (L_i - E_i)^2$, and the sum of the maximum correlation coefficient of $\{L_i\}$ and $\{E_i\}$ sequences, so as optimally to approximate the cumulative histogram, and designating said minimizing pixel value as said second binarization threshold ~~finding a value between the minimum absolute pixel value and the maximum absolute pixel value, such that the two linear segments constructed by the occurrence percentage of the minimum absolute pixel value, the cumulative occurrence percentage of the absolute pixel values equal to or smaller than the selected value and the cumulative occurrence percentage of the absolute pixel values equal to or smaller than the maximum absolute pixel value optimally approximate said cumulative histogram; defining the coordinate of every point in the linear segments constructed by the minimum absolute pixel value, the selected value and the maximum absolute pixel value as (i, L_i), and defining the coordinate of every point in the envelope line of the cumulative histogram as (i, E_i), such that the pixel value obtaining the minimum of $\sum_i |L_i - E_i|$, the pixel value obtaining the minimum of $\sum_i (L_i - E_i)^2$ or the pixel value obtaining the maximum correlation coefficient of $\{L_i\}$ and $\{E_i\}$ sequences is~~

~~regarded as said binarization threshold~~.

11. (New) The method for detecting motion pixels in an image according to claim 6, wherein said step 1 is performed by subtracting said background image from said current image.

12. (New) The method for detecting motion pixels in an image according to claim 6, wherein said step 1 is performed by dividing said background image from said current image.

13. (New) The method for detecting motion pixels in an image according to claim 6, wherein said step 1 is performed by subtracting said background image after performing a logarithmic operation from said current image after performing a logarithmic operation.

14. (New) The method for detecting motion pixels in an image according to claim 6, wherein said step 3 is performed by using an average value of all or part of the pixel values, in said difference image, whose absolute values are smaller than or equal to said first binarization threshold as a correction value, and then subtracting said correction value from said difference image, thereby obtaining said updated difference image.

15. (New) The method for detecting motion pixels in an image according to claim

6, wherein said step 3 is performed by using an average value of all or part of the pixel values, in said difference image, whose absolute values are smaller than or equal to said first binarization threshold as a correction value, and then dividing said correction value from said difference image, thereby obtaining said updated difference image.

16. (New) The method for detecting motion pixels in an image according to claim 6, wherein said step of finding a binarization threshold from the distribution of all absolute pixel values in said difference image in step 4 comprises the sub-steps of:

(1) counting occurrences of all absolute pixel values to plot a cumulative histogram of pixel values, wherein a transverse axis of said cumulative histogram indicates all possible absolute pixel values arranged in ascending order, and a longitudinal axis indicates a cumulative occurrence count equal to or smaller than the absolute pixel values;

(2) defining two linear segments constructed by (i) an occurrence count of the minimum absolute pixel value, (ii) said cumulative occurrence count of the absolute pixel values equal to or smaller than a selected absolute pixel value between the minimum and maximum absolute pixel values and (iii) said cumulative occurrence count of the absolute pixel values equal to or smaller than the maximum absolute pixel value, wherein said selected absolute pixel value includes all possible absolute pixel values between the minimum and maximum absolute pixel values;

(3) defining the coordinate of every point in the two linear segments as (i, L_i), and defining the coordinate of every point in an envelope line of the cumulative histogram as (i, E_i); and

(4) finding, among said selected pixel value, a pixel value that minimizes at least one of the sum $\sum_i |L_i - E_i|$, the sum $\sum_i (L_i - E_i)^2$, and the sum of the maximum correlation coefficient of $\{L_i\}$ and $\{E_i\}$ sequences, so as optimally to approximate the cumulative histogram, and designating said minimizing pixel value as said first binarization threshold.

17. (New) The method for detecting motion pixels in an image according to claim 6, wherein said step of finding a binarization threshold from the distribution of all absolute pixel values in said difference image in step 4 comprises the sub-steps of:

(1) counting occurrences of all absolute pixel values to plot a cumulative histogram of pixel values, wherein a transverse axis of said cumulative histogram indicates all possible absolute pixel values arranged in ascending order, and a longitudinal axis indicates a cumulative occurrence percentage equal to or smaller than the absolute pixel values;

(2) defining two linear segments constructed by (i) an occurrence percentage of the minimum absolute pixel value, (ii) said cumulative occurrence percentage of the absolute pixel values equal to or smaller than a selected absolute pixel value between the minimum and maximum absolute pixel values and (iii) said cumulative occurrence percentage of the absolute pixel values equal to or smaller than the maximum absolute pixel value, wherein said selected absolute pixel value includes all possible absolute pixel values between the minimum and maximum absolute pixel values;

(3) defining the coordinate of every point in the two linear segments as (i, L_i), and defining the coordinate of every point in an envelope line of the cumulative histogram

as (i, E_i); and

(4) finding, among said selected pixel value, a pixel value that minimizes at least one of the sum $\sum_i |L_i - E_i|$, the sum $\sum_i (L_i - E_i)^2$, and the sum of the maximum correlation coefficient of $\{L_i\}$ and $\{E_i\}$ sequences, so as optimally to approximate the cumulative histogram, and designating said minimizing pixel value as said second binarization threshold.